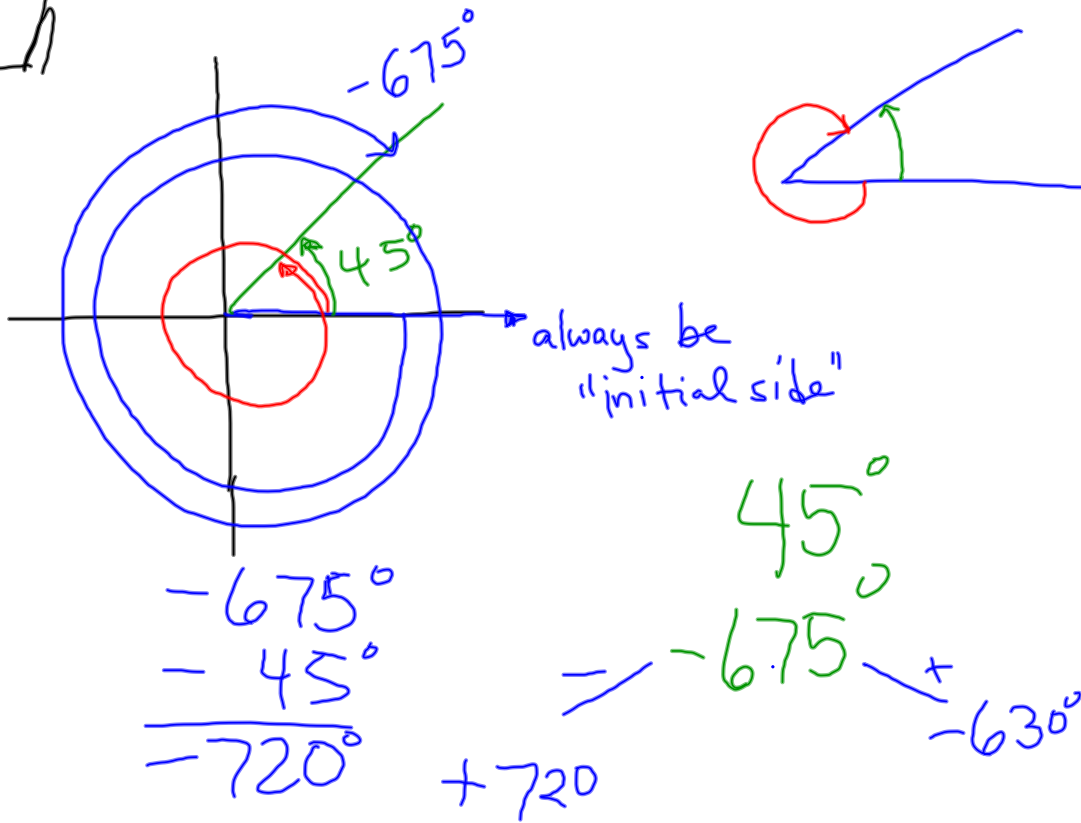
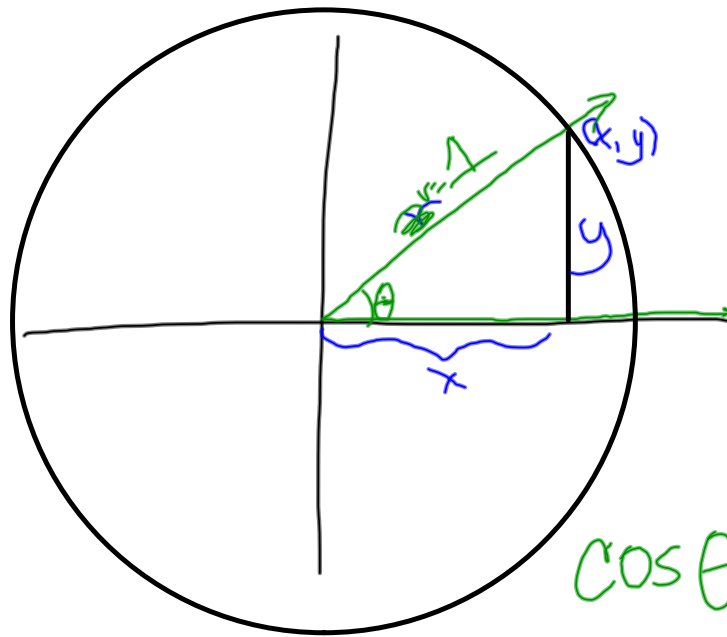


6.41





$\theta$  "theta"

$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{y}{r}$$

$$\cos \theta = \frac{x}{r}$$

$$x = r \cdot \cos \theta \quad | \quad y = r \cdot \sin \theta$$

$$r^2 = x^2 + y^2 = (r \cos \theta)^2 + (r \sin \theta)^2$$

$$\cos^2 \theta = (\cos \theta)^2 = \frac{r^2 \cos^2 \theta}{r^2} + \frac{r^2 \sin^2 \theta}{r^2}$$

$$\sin^2 \theta = (\sin \theta)^2 = \frac{r^2 \cos^2 \theta}{r^2} + \frac{r^2 \sin^2 \theta}{r^2}$$

$$= r^2 (\cos^2 \theta + \sin^2 \theta) = r^2$$

$$\cos^2 \theta + \sin^2 \theta = 1 \quad \text{IDENTITY}$$

